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ABSTRACT

The study examined the interaction behaviors of nonhandicapped siblings of 60 preschool children with either hearing impairments, cognitive/language impairments, or Down Syndrome, and compared these behaviors with those of 35 siblings of nonhandicapped children. Videotapes of social interactions were evaluated for behaviors suggesting imitation, dominance, agonism, and prosocial behavior. Children's mothers completed questionnaires related to their perception of the siblings' relationships, family resources, stress, support and functioning, and demographic information. Statistically significant findings for siblings of handicapped children included relations with age (older children displayed greater dominance); relations with birth order (older siblings imitated less and were more prosocial); and relations with age gap (greater age gaps were associated with greater dominance). Siblings of control children exhibited significantly more prosocial behavior but did not differ from siblings of handicapped children on imitation, dominance, or agonism. Gender differences were not found. Maternal questionnaire data indicated that family cohesiveness was negatively related to agonism, family size was positively related to prosocial behaviors. Separate analyses by handicapping condition found that siblings of Down syndrome children displayed the greatest dominance and Down syndrome children were most agonistic. Appendixes include the study protocol, the coding system, and the Sibling Behavior Rating Scale. (DB)

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**AN INVESTIGATION OF FOUR DIMENSIONS OF SIBLINGS'
RELATIONSHIPS OF HANDICAPPED/NONHANDICAPPED
SIBLING DYADS: PHASE I**

FINAL REPORT

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**AN INVESTIGATION OF FOUR DIMENSIONS OF SIBLINGS '
RELATIONSHIPS OF HANDICAPPED/NONHANDICAPPED
SIBLING DYADS: PHASE I**

FINAL REPORT

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PREFACE

This innovation project originated from a meta-analytic review of research on sibling relationships conducted by Marcia Summers. Using this review as a base, Carl Summers developed a project to examine findings derived from the review with samples of handicapped children. Both Marcia and Carl were perceptive in their realizing a need for observation-based data on how brothers and sisters with a handicapped sibling actually behave with one another.

We express our appreciation to those whose efforts and patience helped bring this project to fruition. First, we thank the parents, brothers, and sisters who endured our questionnaires, scheduling, and videotaping. Their cooperation was essential to the success of this project and we admire their openness in sharing with us a glimpse of their lives. Second, our efforts were facilitated by the cooperation of our site coordinators who went "beyond the call of duty" to host us during data collection. We thank Dr. Pat Hollinger in Iowa, Ms. Susan Batson in Louisiana, Ms. Gillis Ward in Arkansas, and Dr. Leon Soderquist in Utah. Third, the many hours of coding and data reduction and entry provided by Eldred Owens, Laura Nelson, Todd Braeger, and Deborah Ascione must be acknowledged as well as the expert video skills shared by Jyme Waidler. Fourth, we thank Utah State University's Department of Psychology and Early Intervention Research Institute for their cost-sharing financial support of this project. Finally, the professional expertise provided by Mary Ellen Heiner in preparing project-related materials is appreciated. Her patience and pleasant demeanor has been unmatched.

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A. ABSTRACT

Imitation, dominance, agonism, and prosocial behavior of children and their handicapped (H) (60 dyads, either hearing, cognitive/language impaired, or Down syndrome) or nonhandicapped (NH) (35 dyads) preschool-aged siblings were scored from videotapes of social interactions in a laboratory playroom. Children's mothers completed questionnaires related to their perception of the siblings' relationships, family resources, stress, support, and functioning, and demographic information. Battelle Developmental Inventory Scores were available for handicapped children.

Statistically significant differences yielded by analyses of covariance (with play frequency as a covariate) and correlational analyses for the four behavioral dimensions for children with H or NH siblings were: (a) relations with age--older children imitated less (for NH), displayed greater dominance (H), less agonism, and greater prosocial behavior (for either H or NH); (b) relations with birth order--older children imitated less (H and NH), displayed less agonism (H and NH), and were more prosocial (H and NH); (c) relations with age gap--greater age gaps were associated with lower levels of imitation (NH), greater dominance (H), and higher levels of prosocial behavior (H and NH). Siblings of control children exhibited significantly more prosocial behavior, but did not differ from siblings of handicapped children on imitation, dominance, or agonism. Gender differences were not found.

Maternal questionnaire data related to handicapped preschoolers indicated that family cohesiveness was negatively related to agonism; higher Battelle scores were positively related to dominance, and family size positively related to prosocial behavior. Separate analyses by handicapping condition indicated that sibling relations are not homogeneous (e.g., children with Down syndrome siblings displayed the greatest dominance, and siblings with Down syndrome were most agonistic). Maternal ratings of sibling relationships were related to observational data although correlations varied for H and NH dyads (e.g., in H dyads, time playing together was positively related to acceptance and negatively related to hostility--these relations did not hold for NH dyads; agonism was positively related to embarrassment in H dyads but unrelated in NH dyads). Developmental level of the target child impacted target child behavior more than sibling behavior.

B. PROJECT OVERVIEW

Sibling relations are believed to be important in moderating social, cognitive, and moral development. Lamb and Sutton-Smith (1982) argue that the sibling's influence is profound because "...Siblings set and maintain standards, provide models to emulate and advice to consider, enact complementary roles in relation to one another through which both develop and practice social-interaction skills, and serve as confidants and sources of non-judgmental social support in times of emotional stress" (p. 6).

Concurrent with increased research attention to the development of sibling relationships in normal children is a growing awareness of the need to study such development in cases where one of the siblings is handicapped. Hobbs and Perrin (1985) estimate that ten percent of children in the United States are disabled or chronically ill, and perhaps 80% of this group could be expected to have at least one nonhandicapped sibling. Given our nation's emphasis on deinstitutionalization and mainstreaming, it is clear that greater numbers of handicapped children are being reared within the family context. Thus, the sibling role in cases where a brother or sister is handicapped is a critical one since today more extensive interaction between handicapped children and their nonhandicapped siblings may occur than has been true in the past. It is important that the sibling influences outlined by Lamb and Sutton-Smith (1982) also be examined for handicapped-nonhandicapped siblings.

Thus, the purpose of this study was to determine the relation of age, gender, birth order, birth gap, and handicapping condition to four dimensions of observed sibling interaction: imitation, dominance, agonism, and prosocial behavior. Variables such as family resources, family size, family stress, and severity of handicap were also considered as potential moderating variables.

Critical Dimensions of Sibling Relationships

In order to understand the effects of a handicap on the relationships of siblings, the dynamics of the nonhandicapped sibling dyad must first be explored. Considerable research has been conducted regarding four of the critical dimensions of sibling relationships: imitation, dominance, agonism (aggressive behavior), and prosocial behavior. Summers (1987) cited 24 studies in her meta-analysis of these four variables in sibling relationships of nonhandicapped children. She defined imitation as "the performance of the same behavior as the sibling." Examples of these behaviors include talking, running, or taking a toy abandoned by the other sibling. Summers reported two statistically significant findings in nonhandicapped children: the younger sibling is more likely to imitate the older (mean $Z = 2.39$, $p < .0001$) and there is less imitation in mixed-sex dyads than in the same-sex counterparts (mean $Z = 1.05$, $p < .0005$).

Dominance referred to the relative amount of power held or perceived to be held by each sibling. Generally, the more dominant sibling directs the action while the less dominant follows along and is directed. Three dominance generalizations reached statistical significance. They were: the older sibling is likely to take the role of manager while the younger takes the role of managee (mean $Z = 2.33$, $p < .0001$); the older is more likely to take the role of teacher while the younger is the learner (mean $Z = 2.38$, $p < .0001$); and the older child is more dominant, or is perceived as such (mean $Z = 2.66$, $p < .0001$).

Agonism was defined as behavior directed toward causing suffering in the sibling. It included physical aggression, object struggles, rivalry, competition, cheating, hostility, and refusal to help or share. Also included were verbal behaviors such as insults, disapproval, threats, tattling, and quarreling. Summers reached the following conclusions concerning the research in the domain of agonism:

1. Older siblings initiated more agonism (mean $Z = 2.22$, $p < .0001$).
2. Agonism was found to be greater as the time between birth dates decreased (mean $Z = 1.09$, $p < .0055$).
3. Males were more agonistic than females (mean $Z = 1.09$, $p < .008$).
4. More agonism was found in same sex dyads ($Z = .859$, $p < .008$).

Prosocial behavior was defined as positive behavior directed toward the sibling. It included helping, sharing, comforting, praising, affection, friendly approaches, intimacy, companionship, cooperative play, caregiving, etc. Summers (1987) reported girls to be more prosocial with their siblings than boys (mean $Z = 2.11$, $p < .0001$), that prosocial behavior increased with time between birth dates (mean $Z = 2.46$, $p = .0001$), and that prosocial behavior was greater between same sex sibling pairs (mean $Z = 1.04$, $p < .0005$). Older siblings initiate more prosocial behavior (2.28 , $p < .0001$).

Evidence of Disruption of the Sibling Relationship

Although several studies have used one or more of these response classes to study nonhandicapped children (Abramovitch, Corter, & Pepler, 1980; Abramovitch, Corter, & Lando, 1979; Bryant & Crockenberg, 1980; and Lamb, 1978), we could locate only one study (Abramovitch, Stanhope, Pepler, & Corter, 1987) examining these variables for a sample of siblings of handicapped children. Using home observations to measure sibling interactions in terms of prosocial, agonism, and imitative behavior in 31 families with a Down syndrome/nonhandicapped dyad, Abramovitch et al. compared the behaviors of the handicapped children to those of the nonhandicapped children. They concluded that the siblings of Down syndrome initiated less prosocial and agonistic behavior, but

imitated more frequently than their nonhandicapped siblings regardless of birth order or gender. Higher levels of prosocial behaviors among large interval dyads and in dyads with a second-born Down syndrome child were interpreted by the authors to be primarily due to the age of the nonhandicapped sibling. Although generally well conceived and executed, the Abramovitch et al. study concerned only one handicapping condition (Down syndrome) and involved only behavior observations; no other methods of assessment were included.

It is important to note that a great deal of non-observational literature concerning siblings of the handicapped exists. Much related literature indicates an increased risk for psychological distress; however, the magnitude of effect varies considerably (Hannah & Midlarsky, 1985). One philosophical framework contends that all nonhandicapped siblings of handicapped children show signs of pathology (Poznanski, 1969; San Martino & Newman, 1974; Trevino, 1979). Apley, Barbour, and Westmacott (1967) reported an incidence rate of adverse outcomes of 27% while a much lower incidence rate of 9% was reported by Lonsdale (1978). The majority of investigators reported rates closer to Apley's estimate (Berggreen, 1971; Gath, 1974; McAndrew, 1976; McMichael, 1971). None of the incidence studies used a comparison group of siblings without a handicapped brother or sister; thus, it is difficult to determine if these results are due to other factors such as low SES rather than to the presence of a handicapped sibling. Using teachers as raters, Tew and Laurence (1975) found that siblings of children with spina bifida were four times as likely to be maladjusted as control subjects on the Bristol Social Adjustment Guide (Stott, 1963).

Although the form of psychopathology varies considerably, certain patterns have emerged. Siblings of handicapped children are frequently reported to experience anxiety (Binger, 1973; Carver and Carver, 1972; Lloyd-Bostock, 1976; McAndrew, 1976; Meyerwitz & Kaplan, (1967), withdrawal or depression (Binger, 1973; Holt 1958; Lavigne & Ryan, 1979; and Lloyd-Bostock, 1976), psychosomatic manifestations such as enuresis and encopresis (Binger, 1973; Carver & Carver, 1972; Grossman, 1972; McAndrew, 1976), and school failure (Berggreen, 1971; Carver & Carver, 1972; Lloyd-Bostock, 1976; Poznanski, 1969; Tew and Laurence, 1975).

Given the preponderance of evidence regarding potential negative outcomes suggested by these findings, the psychological adjustment of siblings of the handicapped should be a concern of all those involved with handicapped children and their families. In effect, the nonhandicapped child may emotionally share his or her sibling's handicap. This sharing may be a positive challenge to the nonhandicapped child's life situation or in a very real sense may become a psychological handicap to the nonhandicapped child.

Evidence for Positive Outcomes

In spite of considerable pessimism concerning the adverse effects of sibship with a handicapped child, several positive

psychological benefits have been noted. "Families with a handicapped child offer normal siblings unusual opportunities for growth as well as unusual problems" (Seligman, 1983, pp. 169-170). Grossman (1972) found such benefits as greater tolerance, understanding of people, compassion, and a dedication to altruistic goals in her sample of college-age siblings of the retarded. An enhancement of self-concept was reported both by Grossman (1972) and by Kowalski (1980). Abramovitch, Stanhope, Pepler, and Corter (1987) found higher levels of nurturance in nonhandicapped siblings with younger Down syndrome siblings than for first-borns in normative dyads with their younger siblings. Finally, McHale, Sloan, and Simeonsson (1986) found that mothers of children with handicapped siblings (autistic or mentally retarded) and the children themselves generally rated their sibling relationships positively. In fact, mothers of nonhandicapped children rated the sibling relationships more negatively than did mothers of handicapped children. However, it should be noted that there was much variability among the groups, with children with handicapped siblings displaying both very negative and very positive patterns.

Cautions Regarding Generalization

The problem of framing questions about the effects of handicapped children on their nonhandicapped siblings (and vice versa) in general terms can be illustrated in at least two ways. First, in a series of studies, Brody and Stoneman (1986) showed that sibling relations are clearly moderated by contextual factors (e.g., the presence of other family members, the nature of the task presented to the siblings). Second, even in cases where handicapping conditions are quite similar, sibling adjustment may be remarkably divergent. This is illustrated in Wood, Boyle, Watkins, Nogueira, Zimmand, and Carroll's (1988) study of children whose siblings suffered from either Crohn's disease (CD) or ulcerative colitis (UC), two forms of inflammatory bowel disease. Children with CD siblings receive significantly higher disorder ratings on The Child Behavior Checklist (Achenbach & Edelbrock, 1986) than children with UC siblings. Clearly, generalizations in this area of research must be made with caution until a sufficient data base is available. This study also suggests that lumping together subjects with differing handicaps to increase sample size (a tempting practice) may mask important empirical relations.

Need for Methodological Improvement

Hannah and Midlarsky (1985) have called for improvement in the research methodology used in handicapped sibling research. They expressed concern that the different handicapping conditions can have diverse impacts on the family, and that research is needed to explore issues across handicapping conditions with a control group of similar siblings who have nonhandicapped siblings. Greater use of assessment techniques other than self-report measures (used by the majority of research in this area) should be encouraged. Currently, the majority of research in this area is conducted with the mother as the informant. Featherstone (1980) posits that the desire for normality in the nonhandicapped

children may lead to distortions. McKeever (1983) notes that sibship is such an affect-laden situation that researchers need to employ more than direct questions and subjective scales. It has been suggested by Grave (1976) that procedures to determine the level of psychological disturbance by directly addressing the siblings' own responses would be a significant contribution to the literature. Hannah and Midlarsky (1985) strongly suggest that consideration should be given to the use of observations of the sibling dyad.

Study Justification and Potential Applications

Given the importance of the sibling relationship, the disruption a handicap is believed to cause in a sibling relationship (which in turn may be associated with dysfunction in school and other social settings), and the lack of information regarding handicapped-nonhandicapped sibling interaction, an investigation into the interrelationships between handicapped and nonhandicapped children is necessary in order to better understand the psychological adjustment processes the nonhandicapped siblings experience. The psychological adjustment of these children is a concern that goes beyond the immediate family. If, in fact, the presence of a handicapped sibling is associated with psychological dysfunction, then the isolation of the factors germane to that dysfunction would be critical in the prevention and early treatment of this population. Such information would be valuable to the nation's school systems so that they can prepare teachers to be alert to the unique stresses that the siblings of handicapped children must face. School counselors would be better prepared to address this population's needs in an attempt to ameliorate these needs and avert further psychological damage. Such information would be helpful in individual counseling sessions, such as those reported by Grossman (1972) and Poznanski (1965) or discussion groups such as those described by Schreiber and Feely (1965). This information is valuable to the parents of these siblings so they may become more aware of the potential hazards in rearing these children, be able to better recognize potential warning signs, and seek help when needed.

This information may be helpful in a programmatic sense in that the identification and treatment of this potentially at-risk population during the early years of childhood may be a cost-effective mechanism to reduce the adult caseload of social service agencies in years to come. With a population of over nine and one half million handicapped children (Hannah and Midlarsky, 1985) of whom about 80% are believed to have siblings (McKeever, 1983), the cost savings of early identification, prevention, and treatment could have a nontrivial effect on the national social service budget.

Conversely, if positive effects, such as increased prosocial behavior and responsibility-taking are found, then this research will confirm the assumption that having a handicapped sibling may enhance children's coping.

C. ORGANIZED PROJECT ACTIVITIES

Procedures for Selecting Participants

The sample group included volunteer families, already participating in the Early Intervention Research Institute's (EIRI) evaluation studies, with a handicapped child aged 3-6 years and at least one of the child's nonhandicapped siblings. We studied 60 such sibling pairs from four different geographic sites (Arkansas, Iowa, Louisiana, and Utah). A sample of 35 nonhandicapped 3- to 6-year-olds and their nonhandicapped siblings was included as the comparison group. Primary qualifications of participants included their volunteering, agreeing to have their children videotaped, and their willingness to participate in potential one- and two-year follow-up assessments. (Procedures were specified in detail in material provided to USU's Institutional Review Board - Human Subjects Committee.)

We acknowledge that our sample was made up of volunteers who agreed to serve in a longitudinal study and that the generality of our findings may be limited to similar families. Given the current state of research relating to the social relations of handicapped siblings as derived from observation (rather than retrospection), limitations of generality are to be expected. It would be hard to conceive of obtaining as rich a data base for such families without their expressed consent and cooperation.

In the following table, we list characteristics of our sample, including the number of children, their ages and birth order, and the nature of their handicap.

Table 1
Sample Characteristics

	Mean Age in Months			
	Hearing Impaired	Down Syndrome	Cognitive/Language Impaired	Nonhandicapped
Target Child				
Males	(N = 12) 54.1	(N = 10) 42.4	(N = 18) 64.0	(N = 15) 50.9
Females	(N = 9) 62.0	(N = 6) 42.1	(N = 7) 55.9	(N = 18) 48.9
Sibling (Older)				
Males	(N = 7) 101.4	(N = 9) 96.0	(N = 8) 114.6	(N = 14) 95.2
Females	(N = 6) 91.2	(N = 7) 110.9	(N = 12) 98.5	(N = 15) 88.1
Sibling (Younger)				
Males	(N = 5) 43.9	(N = 0) n/a	(N = 3) 57.5	(N = 2) 36.0
Females	(N = 3) 43.2	(N = 0) n/a	(N = 2) 49.7	(N = 2) 37.7

Forms of Assessment

In our efforts to take advantage of the methodological and conceptual recommendations appearing recently in the literature, we approached assessment through multiple, complimentary formats. These included direct behavioral observations of sibling interactions and parent ratings of sibling adjustment. We judged that it was critical to include both objective and subjective forms of assessment, and qualitative and quantitative measures in examining the nature of sibling relationships (Knafl & Deatricks, 1987; Senapati & Hayes, 1988).

As depicted in Figure 1, we conceptualized factors related to sibling relationships on a proximal-distal dimension. Our general assessment strategy was to tap into this dimension at a number of points from the most proximal (direct behavioral observation of social interactions between siblings) to the most distal (family demographic characteristics). Each of these forms of assessment is described in detail in the following sections.

Behavior observations of social interactions. At the core of our assessments was a seven-component, 30-minute observation protocol. Sibling dyads were videotaped during seven tasks we designed to provide opportunities for the four main behavioral dimensions in this project: dominance, imitation, prosocial, and agonism. Tasks included construction with Duplo blocks, coloring, a play form of the Matching-Familiar-Figures task, fantasy play, and opportunities for clean-up and to share food. (For a complete description of the protocol, see Appendix). The behavioral categories include independent and interactive play, on- and off-task behavior, imitation, agonism, prosocial behavior, and dominance. Definitions and examples of each of the aforementioned behaviors are in the Appendix. Each of these behaviors was scored for either the handicapped or nonhandicapped sibling. We consciously kept our observers naive as to our specific hypotheses.

Rationale for structured, laboratory observation. Our development of a structured observational context was prompted by more than a simple concern with standardizing setting and tasks across dyads. Our experience suggested that observations conducted in unstructured, "free play" contexts are subject to periods, often prolonged, of inactivity or, at best, parallel play. When such unstructured sessions are conducted in-home, there is a compounding problem of children leaving the play area, either singly or as a dyad, and attempts by the children to engage the parent(s) in interaction or conflict resolution. Interruptions by other siblings, not the focus of study, and routine disruptions (e.g., phone calls, visitors) may also interfere with the observation. This is not to say that we are minimizing the issue of generality between behavior in contrived as distinct from natural settings. Rather, we judge that this issue is best resolved after demonstrations of social interaction differences have been documented in more rigorously standardized contexts. We point to the results from our project as testimony to the effectiveness of this initial strategy.

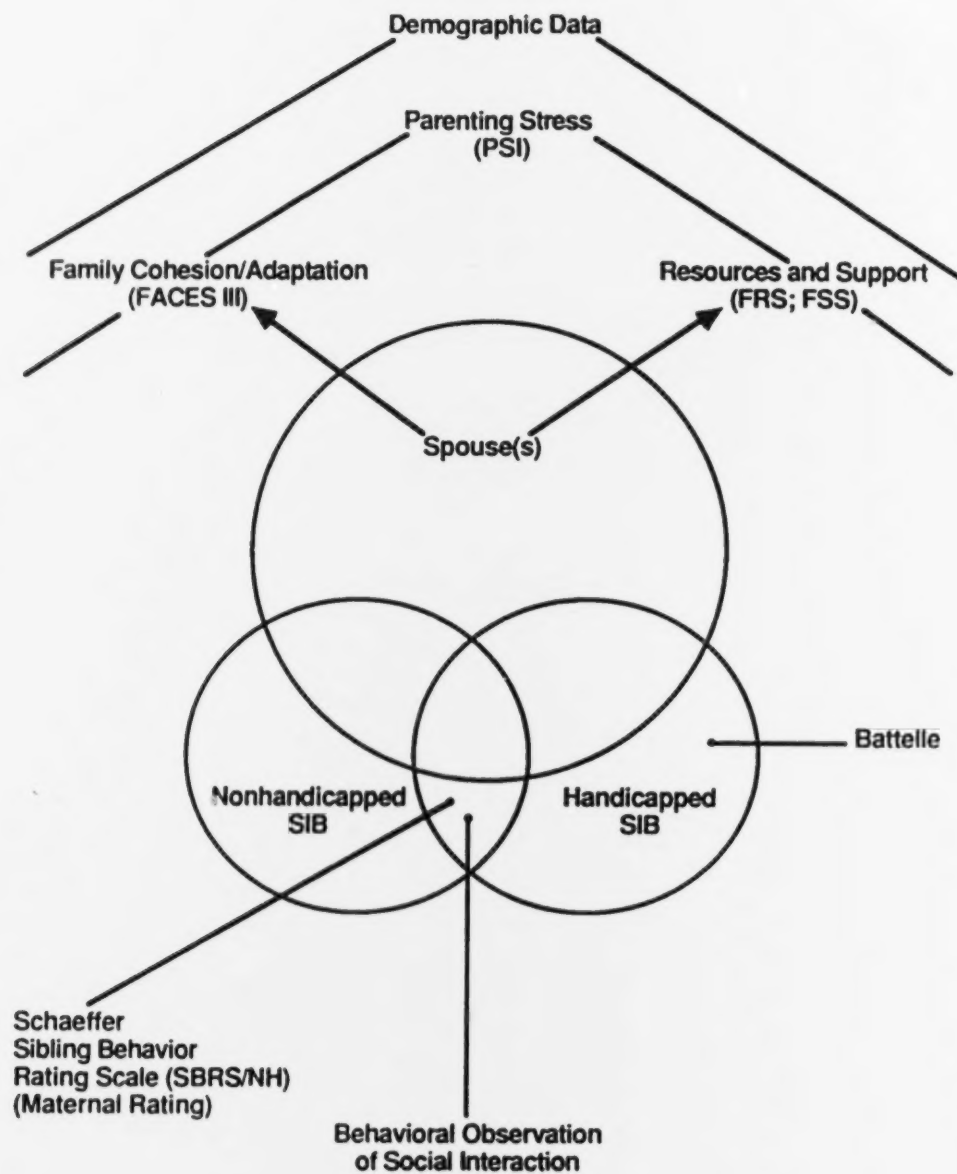


Figure 1: Assessment System

The specific activities included in the observation protocol were carefully selected to provide opportunities for the target behaviors of interest to us (imitation, agonism, prosocial, and dominance) and to avoid boredom which might ensue were a single activity used. The activities also provided focused challenges to the dyads (e.g., to cooperate in the coloring task and clean-up, to share materials and help in the block copying tasks, to engage in verbal interaction in the storytelling task). We viewed this as similar to a test with many items in contrast to a single item assessment and assume that the former approach has higher reliability. We have studied siblings of relatively wide age differences and have not noted problems with the developmental level of the tasks; however, our focus was not on task success but on the siblings' collaboration (or lack thereof) in a situation where tasks may not be of equal interest to both children. We believe this is related to similar challenges to their coping in natural settings.

Reliability. The detailed coding system employed in this study required that a large amount of time be spent on training the coders. Initially, coders met several times weekly to view the practice tapes and to discuss problems in coding them. When it appeared that coders were having few problems with agreement in coding, they were asked to separately code the same tape for reliability purposes. Reliabilities obtained at this point were: play alone/play together = .81, on-task/off-task = .83, imitation = .50, agonism = .69, prosocial behavior = .58, and dominance = .84. Artificial inflation of reliabilities by counting those segments where a behavior did not occur as "agreements," is often used in this type of research; however, we felt that a truer reliability could be obtained by avoiding that practice (Barton & Ascione, 1984; Lech & Ascione, 1984). Thus, while these reliabilities may appear lower than those reported in other studies, they are probably higher in actuality. Also, the lowest reliabilities were found for the most infrequently occurring behaviors; for example, only three instances of imitation were observed in this reliability sampling. It was agreed that the coders would code each tape twice; once for prosocial and imitation behaviors, and once for agonism and dominance behaviors, since we found that coders focused on the dominance and agonistic aspects to the exclusion of prosocial and imitative behaviors. (There were no disagreements on prosocial and imitation behaviors; all "disagreements" occurred when one coder noted the behaviors and the other missed them.)

Retraining of coders took place approximately every 20 tapes, in order to discuss problems and check for observer drift. Reliabilities taken at these checks did not differ markedly from those obtained in the first check, indicating that this range of reliability was probably optimal given the constraints of the methodology.

Additional evidence for reliability is found in tape-retape results. Nine dyads were taped again six weeks after the initial taping. Significant correlations were obtained for these two tapings on three of the four behavior scales for the target

child: imitation ($r = .52$, $p = .07$); agonism ($r = .65$, $p = .03$); and prosocial behavior ($r = .89$, $p = .001$). Dominance was positive but not significant. Significant correlations between behavior at Taping 1 and behavior at Taping 2 was found on three of the four scales for the sibling as well: imitation ($r = .95$, $p = .000$); prosocial behavior ($r = .67$, $p = .024$); and dominance ($r = .97$, $p = .000$). Agonism was also positive but not significant. These results indicate stability of sibling behavior over a short time span, and argue for the reliability of the coding system in identifying these behaviors.

Children's developmental levels. As a rough index of initial developmental status, we used the Battelle (BDI) scores obtained for the handicapped siblings. For the BDI, both test-retest and inter-rater reliability for total scores exceed .89 for the age-range of our sample.

Distal forms of assessment. Five types of assessment were used to assess family cohesion/adaptation, financial resources, family support, and demographic information: 1) The Family Adaptability and Cohesion Evaluation Scales III (FACES III) (Olson, Portner, & Lavee, 1985) were used to index family functioning on three factors. This scale has acceptable internal consistency (.68) and test-retest reliability (.84). 2) The Family Resource Scale (FRS) (Dunst & Leet, 1985) measures the extent to which sufficient types of resources (e.g., financial, medical, time) are adequate in households with young children. The reported internal consistency of this scale is .98 (item-total). 3) The Family Support Scale (FSS) (Dunst, Jenkins, & Trivette, 1984) assesses the degree to which different sources of support (e.g., relatives, friends, agencies) have been helpful to families rearing young children. Internal consistency for this scale is .85 and total score test-retest reliability is reported to be .91. 4) The Parenting Stress Index (Abidin, 1983) was used to identify parent-child systems under stress and at-risk for dysfunctional parenting. Item-total coefficient alpha for this instrument is reported to be .95 with test-retest reliability of .83. Finally, 5) Demographic data obtained via questionnaires included parents' ages, educational, occupation, income level, marital status, ethnicity, family size, amount of time the handicapped sibling is in child care, and the ages, grade levels and special services, if any, for the nonhandicapped sibling.

In addition, the primary caretaker was asked to complete an adaptation (taking into consideration gender and handicap) of the Schaeffer Sibling Behavior Rating Scale (SBRs/NH) (McHale, Sloan, & Simeonsson, 1986) on the nonhandicapped child's display of acceptance, hostility, support, and embarrassment toward the handicapped sibling (see Appendix).

Chronology of Project Activities

In this section, we outline the major project activities, conducted during the innovation project, by quarters, spanning the period October 1987 through September 1988.

First Quarter (September - December, 1987). Cooperating agencies were notified that the innovation project was approved and funded by NIHR, and were asked to confirm their willingness to participate in the research (which each agency did). Preliminary contacts were made with parents of potential subjects at each site to inform them of the nature of the project and interest in participating. Parents were told of the informed consent procedures, observation and videotaping methods, and the nature of the questionnaires. A tentative schedule of our visit to each site was indicated and, if parents expressed interest, were told they would receive a letter asking them to confirm their desire to have their children participate.

We continued our search of the literature for studies related to observations of handicapped children's interactions with their siblings. We also secured the necessary videotaping equipment including purchase of a character generator to assist in labeling, dating, and coding videotaped segments (we express appreciation to USU's Department of Psychology and the Developmental Center for Handicapped Persons for assisting in the acquisition of this equipment). Blank VHS tapes were purchased and all equipment was tested.

Most of our efforts were directed at the development and pilot testing of our observational protocol since this was the centerpiece of our project. The final content of the protocol was described earlier. We pilot tested a variety of tasks with volunteer sibling dyads, with and without a handicapped sibling, recruited from the local community. The nature of the tasks was modified and segment duration adjusted to provide engaging activities whose duration would not produce boredom and disinterest. A script associated with the protocol was developed and rehearsal sessions were conducted with additional volunteers to anticipate any problems that might arise with the conduct of the session, select the best camera angles, and gauge set-up and clean-up times. We also practiced having an adult competent in ASL provide instructions to hearing-impaired siblings.

Once protocol development was completed, we created a prototype observation coding scheme, testing intervals of varying duration. The scheme included tentative definitions of each of the major observation dimensions (imitation, agonism, prosocial, and dominance) including examples and non-examples.

Second Quarter (January - March, 1988). Copies of the non-observational assessment instruments (e.g., Parent Stress Index) were assembled into a battery ready for administration. Parental participation at each site was confirmed and dates established for our visits to each of the sites. Two project staff traveled to each of the out-of-state sites during this quarter and part of the next to collect subjective forms of data and conduct the observation sessions. (We had noted in our pilot testing that it was virtually impossible for one person to videotape and direct siblings with our script, making certain that session segments adhered to our time schedule.) Visits were made to sites in Iowa, Louisiana, and Arkansas with duplicate videotapes made shortly

after return to the university. During the period these visits were being made, project staff in Utah finalized the observation coding scheme used to score sibling interactions and began training of the two individuals who would code the videotapes. Training included simultaneous scoring of practice videotapes created in our pilot work, with the discussion and resolution of areas of disagreement. Final adjustments were made to the definition codes as a result of the training experience.

Segments of videotapes were duplicated and mailed to participating parents. These videotapes were one of the incentives used to assist in securing parental participation in current and future research. Receiving a copy of their children's videotaped interactions proved to be greatly appreciated by the parents and children.

Third Quarter (April - June, 1988). Sibling codes were assigned to subjects, and data entry for non-observational assessments was begun. Project personnel traveled to the Salt Lake City site to collect data, and supplementary control dyads were recruited and tested at a local (Logan, Utah) site.

The focus during this quarter was on primary and reliability coding of the videotaped interaction data. Coding of 30-minute sessions required between one and two hours of coders' time; in some cases, especially for control dyads where verbal interaction was often quite extensive, more time was required for scoring. As coding was completed, data for the four primary interaction categories were entered into the computer. Data entry for the non-observational assessments continued, including entry of Battelle scores for the handicapped siblings.

Fourth Quarter (July - September, 1988). Data entry, data checking, and scoring of videotapes continued and data analysis was begun (most of which was completed using SPSS-PC programs and clerk time provided by the Early Intervention Research Institute). Data analysis focused on the primary hypotheses noted earlier in this report. We note that most of the analyses used analysis of covariance with duration of play as a covariate--we were concerned that opportunities for dominance, imitation, prosocial behavior, and agonism would be influenced by the amount of time siblings were actually engaged in interaction. This form of analysis proved quite useful since play was a significant covariate in many of our analyses.

Preliminary results of the research were presented at the International Early Childhood Conference on Children with Special Needs (sponsored by the Division for Early Childhood of the Council for Exceptional Children) in November as part of a session on siblings of the handicapped. We also coordinated the submission of a symposium on siblings of the handicapped which, if accepted, would be presented at the April, 1989, meeting of the Society for Research in Child Development. These dissemination efforts will be supplemented as we prepare a report of the results of this research for submission to a scholarly journal.

Letters of appreciation were sent to participating agencies and parents. During the course of this project, we prepared for a longitudinal follow-up of the sibling dyads, should we be successful in securing funding for such a study.

Data Collection

The data collection phase consisted of traveling to each site and videotaping the sibling dyads as previously described. (Contacting the parents and scheduling the taping sessions were done by a graduate assistant just prior to the data collection trips.) The tapings were staged at the institution associated with the site where possible. In the event that space at any of the institutions could not be scheduled, a conference room at a convenient hotel close to the site was rented for this purpose.

Two copies of each tape were made following the taping session. One was left at the taping site for their historical records, while the second was kept at Utah State University as a back-up. Tapes were kept in a locked cabinet in order to ensure limited access and confidentiality. (Backup tapes were stored in a separate building to assure preservation of at least one copy.)

At the time of the videotaping, parents were asked to complete the Sibling Behavior Rating Scale.

Data Preparation. The data preparation phase included the physical recording of data and their entry on the computer. The following procedures were followed in the preparation of all of the data for analysis:

1. Copies of the measures were kept at the research sites; originals were stored at the Early Intervention Research Institute (Utah State University).
2. Immediately upon receipt of the data, a clerk catalogued the data received (i.e., names of subjects, the specific data included, and the date received).
3. The clerk then checked all data received for completeness and accuracy (e.g., scores parent measures such as the PSI and the Sibling Behavior Rating Scale).
4. All errors and problems on all measures were noted in a running project diary. Changes made and procedures used for corrections of original data were also detailed.
5. At least 10% of all data was reviewed or rescored by a graduate student or second trained clerk.
6. If there was 100% interrater agreement on the 10% check, data were then entered on FORTRAN forms by the graduate student or clerk. If, however, additional errors were found by the second rater, a second 10% of the data were checked. If further errors were found in this check, the entire data set received in that batch was rescored.

7. At least 10% of data entered on FORTRAN forms was checked by a second graduate student or clerk. The accuracy criteria above applied to this phase of data entry also.
8. After the above checks were satisfactorily completed, data were then keypunched into the computer. Following keypunching, another 10% check of the data was done by a graduate student or clerk, following the same accuracy criteria previously detailed.
9. A back-up floppy disk and two hard copies of the data were kept by the Early Intervention Research Institute's computer coordinator. Additionally, a copy of the data was kept on magnetic tape in the University's computer tape storage area.
10. The graduate assistant ran the SPSS program FREQUENCIES (with means, standard deviations, medians, modes, and ranges requested) for all variables so that the data could be checked for out of range values, sums of subdomain scores that did not match total domain scores, and accuracy of data for variables with known values (e.g., sex, handicapping condition).
11. If errors were found on step 11, then the graduate assistant and clerk compared the hard copy of the data with the FORTRAN form to check for keypunch errors. The graduate student/clerk reading the FORTRAN sheet was the same person who prepared that sheet. All errors were corrected on the floppy disk, which were then given to the computer coordinator so that backups and new hard copies could be made. FREQUENCIES were run again for final check and future referencing.
12. When all errors had been corrected and notes made in the project diary of all changes and the reasons for them, the data were considered "clean" and ready for further analysis.

Computer Analysis. This phase includes the programming, data manipulation, and analysis of the data. Given the nature of the research questions, an analysis of covariance schemata were employed as the underlying paradigm for analysis. A multiple regression/correlation schema was employed to isolate potential covariates. The cross-sectional design consisted of four analysis of variance models with the variables imitation, dominance, agonism, and prosocial behavior as the dependent variable. Independent variables included age of nonhandicapped sibling, gender of nonhandicapped sibling, birth order, birth gap, and handicapping condition. In addition to these independent variables, severity of handicap, family resource and stress data collected as part of the Early Intervention Research Institute's longitudinal study were used to determine the possibility of moderating variables. Included among these measures were the previously described Battelle Developmental Inventory (BDI),

Family Support Scale (FSS), and Family Resource Scale (FRS). (The Family Inventory of Life Events and Changes [FILE], also gathered as part of the Early Intervention Research Institute studies, was offensive to some parents and was not included in the analysis.)

D. RESULTS

In this section, hypotheses which guided the project will be stated and results of analyses for each hypothesis detailed.

Imitation

Hypothesis 1: Siblings of handicapped children will show less imitative behavior than siblings of non-handicapped children.

Using ANCOVA (with number of intervals in which children played together 2/3 of the time or more as the covariate), it was found that the hypothesis was not supported, $F(1,92) = .75$, $p = .39$. The ANCOVA adjusted mean for the control group was .50 (SD = .95) and for the siblings of the handicapped children was .78 (SD = 1.82). This was obviously a low-frequency behavior and caution concerning generalizations should be exercised.

a. Imitative behavior will decrease with age.

The hypothesis was supported for the control group, $r(35) = -.35$, $p = .021$, but not for the siblings of handicapped children, $r(60) = .05$, $p = .347$. Imitation is low overall for siblings of handicapped children across ages.

b. No difference in imitation will be found between boys and girls.

Using ANCOVA (with number of intervals in which siblings played together as a covariate), it was found that the hypothesis was supported, $F(1,90) = .00$, $p = .95$. The interaction between gender of the sibling and groups (handicapped sibling vs. control) was nonsignificant, $F(1,90) = .08$, $p = .78$. Means and standard deviations for these groups are found in Table 2.

Table 2
ANCOVA Adjusted Means and Standard Deviations
for Male and Female Siblings

Variable	Female Control (N=16)	Female Handicapped (N=29)	Male Control (N=19)	Male Handicapped (N=31)
Imitation	.44 (.892)	.82 (1.79)	.55 (1.02)	.75 (1.88)
Dominance	17.39 (16.07)	14.26 (20.29)	17.22 (13.08)	17.34 (28.24)
Agonism	.75 (.93)	2.63 (4.48)	2.98 (6.06)	3.05 (3.99)
Prosocial	24.80 (12.36)	15.30 (14.26)	21.41 (13.95)	13.29 (12.35)

- c. *Younger siblings (birth order) will be more imitative unless the older child is handicapped.*

Using ANCOVA (with number of intervals siblings played together as a covariate), it was found that younger siblings are more likely to imitate than older siblings, $F(1,90) = 9.36$, $p = .003$, but that the interaction between birth order and group status (control or handicapped sibling) was nonsignificant, $F(1,90) = .00$, $p = .99$. Means and standard deviations for the groups are found in Table 3.

Table 3
ANCOVA Adjusted Means and Standard Deviations
for Younger and Older Siblings

Variable	Younger Control (N=5)	Younger Handicapped (N=12)	Older Control (N=30)	Older Handicapped (N=48)
Imitation	1.55 (1.95)	1.75 (2.64)	.21 (.61)	.41 (1.53)
Dominance	11.46 (10.37)	5.09 (2.68)	15.51 (14.49)	15.68 (26.18)
Agonism	4.99 (7.48)	4.40 (6.32)	1.48 (3.89)	2.46 (3.46)
Prosocial	10.29 (10.20)	12.02 (8.08)	23.25 (12.13)	12.92 (14.00)

- d. *No difference in imitation is expected due to birth gap (in months).*

Imitation is negatively related to birth gap for the control children, $r(35) = -0.33$, $p = .025$ and unrelated for the siblings of handicapped children ($r[60] = .06$, $p = .34$).

Dominance

Hypothesis 2: Siblings of handicapped children will show more dominance behavior than siblings of nonhandicapped children.

Using ANCOVA (with number of intervals in which siblings played together used as covariate), it was found that there was no significant difference in the dominance levels of the two groups, $F(1,92) = .14$, $p = .706$. ANCOVA adjusted mean for the control group was 17.29 (SD = 14.31) and for the siblings of handicapped children was 15.84 (SD = 24.58).

- a. *No difference in dominance behavior will be found due to age.*

No relation was found between dominance and sibling age for the control children, $r(35) = -.062$, $p = .361$, but a significant and positive relationship was found for siblings of handicapped children, $r(60) = .42$, $p = .000$.

- b. *Boys will be more dominant than girls.*

Using ANCOVA (with number of intervals in which siblings played together used as a covariate), it was found that the hypothesis was not supported, $F(1,90) = .14$, $p = .71$. The interaction between sibling gender and group status (control vs. sibling of handicapped child) was nonsignificant, $F(1,90) = .18$, $p = .68$. Means and standard deviations are found in Table 3.

- c. *Younger siblings (birth order) will be less dominant unless the older child is handicapped.*

Using ANCOVA (with number of intervals in which siblings played together as covariate), it was found that the hypothesis was not supported, $F(1,90) = 1.88$, $p = .17$. The interaction between birth order and group status (control vs. sibling of handicapped child) was also nonsignificant, $F(1,90) = .40$, $p = .53$. Means and standard deviations are found in Table 4.

- d. *Dominance is expected to be greater in widely spaced dyads.*

No relationship was found between birth gap and dominance in the sibling for the control children, $r(35) = .09$, $p = .29$, but a significant and positive relationship was found for siblings of handicapped children, $r(60) = .54$, $p = .000$.

Agonism

Hypothesis 3: Siblings of handicapped children will show more agonistic behavior than siblings of nonhandicapped children.

Using ANCOVA (again with number of intervals in which the children played together as covariate), it was found that the hypothesis was not supported, $F(1,92) = .92$, $p = .34$. ANCOVA adjusted mean for the control group was 1.96 (SD = 4.59) and for the siblings of handicapped children was 2.85 (SD = 4.20).

- a. *No difference in agonism due to age will be found.*

A negative relationship was found between sibling age and agonism for the control children, $r(35) = -.32$, $p = .029$ while no relationship between age and agonism was found for the siblings of handicapped children, $r(60) = -.04$, $p = .364$.

- b. *Boys will be found to be higher in agonistic behavior than will girls.*

Using ANCOVA (with number of intervals in which the children played together as a covariate), it was found that the hypothesis was not supported in that girls and boys did not differ significantly in use of agonistic behavior, $F(1,90) = 2.05$, $p = .16$. Interaction between gender and group (control vs. siblings of handicapped children) was nonsignificant, $F(1,90) = .94$, $p = .33$. Means and standard deviations for the groups are found in Table 2.

- c. Older siblings (birth order) will be more agonistic than younger.*

Using ANCOVA (with number of intervals siblings played together as covariate), it was found that older children were less agonistic than their younger siblings for both groups, $F(1,90) = 4.50$, $p = .037$. The interaction between birth order and group status (control vs. sibling of handicapped child) was nonsignificant, $F(1,90) = .39$, $p = .534$. Means and standard deviations are found in Table 3.

- d. Less agonism is expected in widely spaced dyads.*

The relationship between birth gap and agonism in the sibling tended toward significance for the control children, $r(35) = -.25$, $p = .076$, but was nonsignificant for the siblings of handicapped children, $r(60) = -.07$, $p = .30$.

Prosocial

- Hypothesis 4: Siblings of handicapped children will show more prosocial behavior than siblings of nonhandicapped children.*

Using ANCOVA (with number of intervals in which siblings played together used as covariate), it was found that the control children exhibited more prosocial behavior than the siblings of handicapped children, $F(1,92) = 14.09$, $p = .00$. The ANCOVA adjusted mean for the control group was 22.95 (SD = 13.21), and for the siblings of handicapped children was 14.25 (SD = 13.22).

- a. No difference in prosocial behavior due to age will be found.*

A significant and positive relationship was found between age and prosocial behavior both for the control children, $r(35) = .46$, $p = .003$, and for the siblings of handicapped children, $r(60) = .46$, $p = .000$.

- b. Girls will exhibit more prosocial behavior than will boys.*

Using ANCOVA (with number of intervals siblings played together as the covariate), it was found that the hypothesis was not supported, $F(1,90) = 1.34$, $p = .25$. Nor was the interaction between gender and group (control vs. siblings of handicapped children) significant, $F(1,90) = .09$, $p = .77$. Means and standard deviations for these groups may be found in Table 2.

- c. *Older siblings (birth order) will exhibit more prosocial behavior.*

Using ANCOVA (with number of intervals in which children played together as covariate), this hypothesis was supported, $F(1,90) = 4.74$, $p = .03$. There was a trend toward significance in the interaction of birth order and group status (control vs. sibling of handicapped child), $F(1,90) = 3.80$, $p = .054$. Younger children exhibit the same amount of prosocial behavior regardless of whether their sibling was handicapped, but older children were more prosocial with their nonhandicapped siblings than with handicapped brothers or sisters. Means and standard deviations are found in Table 3.

- d. *Prosocial behavior is expected to be greater in widely spaced dyads.*

The relationship between birth gap and prosocial behavior was significant and positive both for control children, $r(35) = .46$, $p = .003$, and for siblings for handicapped children, $r(60) = .38$, $p = .001$.

In addition to these analyses, family resources (assessed by the Family Resource Scale), family stress (the Parent Stress Index), family support (Family Support Scale), family functioning (Family Adaptability and Cohesion Scale), family size (number of persons in the family), and target child's developmental level (Battelle Developmental Inventory) were examined for their role as moderating variables in sibling interactions. (Recall that no Battelle Developmental Inventory scores were available for the control children because the Battelle is too costly and time-consuming to administer. Handicapped children were given the Battelle as part of their involvement with studies conducted by the Early Intervention Research Institute.)

The variables family stress, family support, family resources, family functioning, family size, and target child's developmental level were entered into separate multiple regression analysis with imitation, agonism, prosocial behavior (for target child and sibling), and dominance serving as dependent variables.

Agonism in the target child was best predicted by family cohesiveness ($B = -.54$, $R[1,52] = .32$, $p = .02$). Note that this relationship is negative. Dominance was predicted by child's developmental level ($B = .07$, $R[1,52] = .31$, $p = .02$). Prosocial behavior was predicted by family size ($B = 3.13$, $R[1,52] = .29$, $p = .04$). No significant predictors for imitation in the target child were found. Additionally, no significant predictors for the sibling were found for any of the four dimensions.

Additional Analyses

Three additional analyses were performed in order to provide more information concerning the nature of the sibling relationship. The first further divides handicapping condition into hearing impaired, Down syndrome, and cognitive/language impaired

samples and compares both target children and their siblings on the four dimensions (imitation, agonism, dominance, and prosocial behavior). The second analysis compares maternal ratings of sibling behavior with the actual behaviors of their children. The third analysis assesses the impact of the handicapped child's developmental level on sibling interactions.

Four Groups Compared. The results of this analysis may be seen in Table 4. Covariates were selected in the following manner: It was felt that for theoretical reasons, four logical covariates could be selected. The first was play, or the number of intervals siblings played together 2/3 of the time or more. The second was the target child's age, the third was the sibling's age, and the fourth was the interval between the birth of the two children, or birth gap. These four variables were entered into separate multiple regression equations with each of the child's and siblings' behaviors (imitation, etc.) used as dependent variables. Significant variables were then used as covariates.

Table 4
Results of the Sibling Interaction Study for Four Groups

ANCOVA Adjusted Means and Standard Deviations							
Variable	Covariates	Normal (N=35)	Hearing Impaired (N=19)	Down Syndrome (N=17)	Cognitive/ Language Impaired (N=24)	ANCOVA F	p
IMITATION							
Target*	Play	3.34 (5.19)	1.87 (2.67)	1.44 (1.97)	.51 (1.28)	3.39	.021
Sibling	Play	.51 (.95)	.68 (1.17)	.45 (1.00)	1.14 (2.55)	.99	.403
AGONISM							
Target	----	2.06 (3.58)	5.73 (5.43)	19.35 (21.97)	6.63 (16.31)	7.13	.000
Sibling	----	1.97 (4.59)	2.47 (3.98)	3.24 (3.99)	2.83 (4.64)	.37	.772
DOMINANCE							
Target	GAP	8.84 (6.71)	4.03 (6.55)	6.04 (2.93)	2.96 (4.62)	6.49	.001
Sibling	Play, Child Age	16.76 (14.31)	9.90 (8.25)	33.13 (32.58)	10.72 (10.15)	7.20	.000
PROSOCIAL							
Target	Play	18.04 (11.67)	12.78 (11.85)	11.24 (12.01)	12.99 (13.48)	1.70	.173
Sibling	Play	23.23 (13.21)	15.15 (13.34)	12.47 (12.78)	15.41 (13.29)	4.88	.003

*Target refers to handicapped sibling or to preschool-aged sibling in nonhandicapped dyads.

The results show that the nature of the handicapping condition of the child has a significant impact on sibling interactions. Notable is the high level of dominance by siblings of Down syndrome children, and the high level of agonism exhibited by the Down children. Handicapped children also exhibit less imitation of their siblings than do control children. The highest levels of prosocial behavior occur in the normal dyads.

Maternal Ratings and Children's Behavior. The results of this analysis are found in Table 5. The Sibling Behavior Rating Scale is a one-page questionnaire in which mothers rated the behavior of the sibling toward the target child. The questionnaire was adapted from Schaeffer and Edgerton (1979). A copy of the questionnaire may be found in the appendix. From this questionnaire, four scales were derived: mother rating of the sibling's acceptance, support, hostility, and embarrassment regarding the target child.

Table 5
Significant Correlations Between Maternal Ratings and Children's Videotaped Behaviors

Target	Maternal Ratings			
	Acceptance	Hostility	Support	Embarrassment
NONHANDICAPPED DYADS (N = 35)				
CHILD BEHAVIORS				
Agonism	x *	x	x	x
Prosocial	.25*	-.32**	.34**	x
Dominance	x	x	-.31**	x
Imitation	x	-.23*	x	x
SIBLING BEHAVIORS				
Agonism	-.38***	.27*	x	x
Prosocial	x	x	x	x
Dominance	x	x	x	x
Imitation	x	x	x	x
TIME PLAYING TOGETHER	x	x	x	x
HANDICAPPED DYADS (N = 60)				
CHILD BEHAVIORS				
Agonism	.18*	x	.21*	.32***
Prosocial	x	.22**	x	x
Dominance	-.29**	.36***	x	x
Imitation	x	x	x	x
SIBLING BEHAVIORS				
Agonism	x	x	x	.36***
Prosocial	.20*	x	x	x
Dominance	.36***	x	.27**	x
Imitation	x	x	x	x
TIME PLAYING TOGETHER	.26**	-.21**	x	.28*

x nonsignificant
* p < .10
** p < .05
*** p < .01

It can be seen that mothers of handicapped and nonhandicapped dyads demonstrate quite different patterns in the way in which their perceptions relate to their children's behavior. One example of this is the negative relationship between perception of hostility and target child's prosocial behavior. This relationship is significantly negatively related for control dyads and significantly, positively related for handicapped dyads. The amount of time children spend playing together appears to be more important to mothers of handicapped children in assessing the sibling relationship than it does to mothers of control children.

Developmental Level. The Battelle Developmental Inventory was administered to the handicapped target children. This measure assesses the child's personal/social, adaptive behavior, motor, communication, and cognitive developmental levels. A developmental quotient was obtained by dividing the child's age equivalent scores by their chronological age in months at the time of testing. The developmental quotients of the target child in each of the five areas (as well as that of the total score) were entered into separate regression equations to predict imitation, agonism, prosocial behavior, and dominance for the target child and sibling.

No developmental quotient scores significantly predicted target child agonism, target child imitation, sibling imitation, sibling agonism, sibling dominance, and sibling prosocial behavior. Target child dominance was predicted by personal/social developmental ($B = .066$, $R[1,53] = .45$, $p = .00$), and by adaptive behavior ($B = -.09$, $R[2,52] = .54$, $p = .00$). Prosocial behavior in the target child was predicted by the child's communication score ($B = .18$, $r[1,53] = .35$, $p = .01$).

E. DISCUSSION

The introduction of a handicapping condition into the sibling relationship appears to affect the behavior of the nonhandicapped sibling in some important ways. Prosocial behavior was significantly higher in the control dyads, indicating that the idea that having a handicapped sibling may ultimately result in a greater tendency toward service careers as reported in some studies (Grossman, 1972) may be valid, but that these prosocial tendencies do not manifest themselves in direct interaction with the sibling.

The pattern of change with age in imitation, agonism, and dominance also appears to differ for control children and the siblings of handicapped children. Both imitation and agonism decreased with age for the control children, but no relationship was found between age and these variables for handicapped children. Dominance increased with age for siblings of handicapped children but was unaffected by age for the control children. Similarly, birth gap plays a different role in siblings of handicapped children than it does for the control children. The closer children are in age, the higher imitation is for the control siblings, but these factors are unrelated for the dyads with a handicapped child. The same is true of agonism. In contrast, handicapped children close in age to their sibling experience less dominance from that sibling, while gap and dominance are unrelated for the control dyads.

The meaning of these differences is not clear. It may be that less change in sibling interaction is found with age for siblings of handicapped children in imitation and agonism because the nature of the relationship changes more slowly since the handicapped child develops at a slower pace. Dominance increases with age for the sibling of the handicapped child because the cognitive gap between the sibling and the target child increases. Higher imitation and agonism in closely spaced control dyads may result from competition for the same resources; these factors may be altered by a handicap which creates different roles for these children within the family. Ultimately, the meaning of these differences in patterns of interaction between control and handicapped/nonhandicapped dyads can only be assessed in terms of impact on the ultimate development of the children. This underscores the need for longitudinal research in this area.

The answer to the question of the effect of handicapping conditions on sibling behavior is that at least for some categories of behavior, differences occur. A simplistic dichotomy thus hides important information regarding sibling interaction. A prime example of this is how siblings of Down syndrome children tend to be very high in dominance compared to siblings of other handicapped children. Mothers of Down syndrome children have also been found to be higher in dominance than

mothers of a matched control sample (Cardoso-Martins & Mervis, 1985). Siblings of Down syndrome children may very well be learning this pattern from their mothers as a way of relating to their handicapped brothers and sisters. Regardless, it can be suggested that dominance is a very pervasive pattern in the family lives of these children. The fact that this same pattern does not hold in other kinds of handicapping conditions underscores a second important point: that all handicapping conditions do not produce equivalent effects on sibling relationships. Previous studies have often assumed that a handicap was a disruption to the family system no matter what kind of handicap it was, and thus siblings of handicapped children could be directly compared with normal siblings without consideration of type of handicap. These analyses bring into question this line of thought.

Previous studies of the sibling relationship have also relied heavily upon self-report measures. The results of maternal ratings of sibling behavior suggest that different factors may influence the perceptions of mothers of handicapped and nonhandicapped siblings. For example, mothers of handicapped children are more strongly influenced by the amount of time their children spend playing together in their assessments of sibling interaction than are mothers of nonhandicapped children. Mothers of handicapped children may have a lowered expectation that their children will interact well together and may see playing together as a sign of acceptance by the nonhandicapped sibling, whereas mothers of normal children see time spent playing together and acceptance as unrelated since they expect their children to play together. Thus, there may be no difference in mother's ratings of acceptance by the sibling of the target child, but very different factors may be influencing the mothers' ratings.

Finally, it should be noted that the handicapped child's developmental level and factors such as family stress, family size, etc. appear to affect the behavior of the handicapped child more than they affect the behavior of the nonhandicapped sibling. Neither the handicapped child's developmental level nor family environmental factors significantly predicted the nonhandicapped sibling's behavior. Early intervention focused on the handicapped child may thus be most effective in influencing the handicapped child's interactions with his or her siblings. However, more research is needed before this claim can be made with authority.

F. Conclusions and Recommendations

Sibling relationships of handicapped and control dyads were found to differ in several important ways. Given the empirical findings, we deem the following inferences to be appropriate:

Impact of handicapping condition: Both research and practice should avoid generalizing about sibling relationships across handicapping conditions. Future research designs should incorporate handicapping condition as a main effect. Apparently, the experience of living with a handicapped sibling differs substantially for each type of handicap and result in distinct reactions on the part of the non handicapped child. Program planners should tailor programs, so far as resources permit, to the specific needs of each handicapping condition.

Self Report Measures: Self report measures should be interpreted with a great deal of caution. Apparently, different factors may influence the perceptions of mothers of handicapped and nonhandicapped siblings.

Age of Children: The amount of imitation, agonism, and dominance appears to differ with age in the control and nonhandicapped children, but does not change with handicapped children. The possible causes and effects of these patterns warrant further investigation. Where it is feasible to encourage a more normal pattern of sibling interaction, practitioners should do so. (For example, siblings of Down syndrome children could be taught to be less directive.)

Developmental Level: The developmental level of the handicapped child appears to affect the handicapped child's behavior more than the siblings. Thus, early intervention focused on the handicapped child appears to have the most potential for changing sibling interactions.

Future Research: Given the significant differences between dyads with different handicapping conditions, analysis by handicapping condition is strongly recommended. Given the distinct differences in the patterns of interaction by age, longitudinal research is strongly recommended to establish developmental norms and possible effects of differential patterns of sibling interaction in handicapped and normal dyads.

G. Research Utilization Plan

Recommendations for professionals who work with handicapped preschoolers include the following:

Hearing Impaired. Encourage handicapped children to "take charge" or direct the activities of others. This allows them a sense of control, building self-esteem and teaching them to understand the consequences of their actions. Encouraging hearing impaired children to increase their interaction with their siblings may also provide positive benefits to the child by giving the handicapped child an additional role model whose behavior may be more age-appropriate than adult models. One suggestion might be to arrange for the hearing impaired child to teach his/her sibling to sign. Acknowledge and emphasize prosocial behavior, such as the sharing of scarce resources, that can be generalized to the sibling relationship. Methods using both verbal and physical sharing, such as those used by Barton and Ascione (1979) are recommended.

Down syndrome. Activities to reduce agonism, such as helping these children learn alternate methods to deal with frustration or conflict, are appropriate. The use of behavioral management techniques, such as those advocated by Walker (1979) are encouraged. (Many teachers are currently using such techniques and may not need further training or dramatic modification of their current classroom management.)

Cognitive/language Impaired. The recommendations for these children are similar to those described for other handicapping conditions. These children should be given opportunities to imitate age-appropriate role models. Games such as "Simon says" may, depending on severity of handicap, be appropriate. Prosocial behavior should be recognized and encouraged whenever possible. These children should also be involved, as far as their handicap permits, in "take charge" games.

Recommendations for professionals running sibling support groups:

1. Interventions such as sibling groups should be customized or at least modified to reflect the unique needs of siblings of handicapped children based on the handicapped child's handicap. Recognition should be given that all siblings of handicapped children are not alike.
2. Sibling groups should be designed to increase empathy with the handicapped sibling, since this will lessen dominance and agonism and help to increase communication.
3. Encouragement of learning of sign language should be given for siblings of hearing impaired or mentally

retarded children since better communication may increase the time spent playing together as well as positive interaction.

4. Sibling groups should help the nonhandicapped child to deal with aggressive behavior in the handicapped child (especially Down syndrome) by teaching them techniques such as ignoring the behavior and reinforcing positive behavior. Intervention to reduce dominance behavior may also prove useful. Adapting Mahoney's (1988) TRIP program is a possible suggestion.
5. Children should feel comfortable in the sibling support group since sharing feelings and experiences can be uncomfortable and true growth will not take place unless the child is personally involved.
6. Children should feel that they are the expert on their sibling's behavior since this helps to increase self-confidence and generates positive feelings.
7. Greater prosocial behavior (helping, sharing, caretaking) by the sibling will increase the child's empathy and sense of responsibility. Emphasize the importance of prosocial behavior, and encourage children to share prosocial experiences.

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Appendix A

Protocol

SIBLING STUDY PROTOCOL

Introduction

The following script should be used for conducting a videotaped assessment of sibling interaction. The purpose of this videotape is to elicit interaction between the siblings through structured activities which can then be analyzed to assess interaction patterns. Only the children and the individual doing the videotaping should be present during the videotaping sequence. The entire taping session should last 30 minutes and it is important that the sequence of activities and time constraints be followed as outlined below.

Setting

The setting and the individual doing the videotaping should be equally unfamiliar to all children. Set up the videotape equipment in a small carpeted room (approximately 12' by 12'). A small table and two small chairs should be arranged in the corner of the room. No other toys or equipment should be visible which would serve as a distraction to the children. The camera should be positioned on a tripod approximately 8-10' from the subjects, should be aimed at the eye level of the children, and should not be directed toward a window. Videotape the children such that the frame includes both participants' faces and hands.

Materials

- Toys:
1. Duplos (mark one set for quicker clean-up)
 2. Small duplo figurine pictures
 3. Matching figures test for each child
 4. One art activity per dyad and crayons
 5. Three cookies on a small paper plate per dyad
 6. Duplo train set

Instructions

Warm-up: Tell the children that they are going to get to play some games. Sometimes you will bring new games for them to play and you will tell them how to play them. However, you will be very busy and you cannot help them so they should work out any problems they may have on their own. (The cameraman will be very busy too.) Allow children to play with the duplo train set as a warm-up activity. (The engineer is the only figurine allowed at this time.) This should be done while you are getting things set up and approximately 5 minutes into the tape. At the end of this segment, do not clean up--just push the toys away from the children's reach.

Matching figures test: Tell the children they get to play a game about same and different. Give them each a copy of the Matching Figures test and show them how each figure at the top has only one figure that matches it. Ask the children to color or scribble

on the one that matches. Allow 3 minutes. Collect the Matching Figures Test from the children, but give them back as a reward at the end of the session.

Duplos: Set out the box of Duplos. Give the children the pictures of the duplo structures and ask them if they can make their duplos look like the ones in the pictures. (Each child will have their own bag of duplos). Allow approximately 6 minutes.

Art activity: Praise the children for the hard work they are doing. Tell them now it is time to help you finish a picture. Tell them you got the picture started and you need their help now to finish the picture. Give them one copy of the art activity and one box of crayons. Show them how each part of the drawing has a streak of color on it and how they need to finish that section with the same color. Allow 5 minutes.

Figurines: Tell the children now they get to make up a story. Introduce the figurines and train only (no track). Tell them that one of the figurines is in trouble and needs help. They need to make up a story that tells why the figurine is in trouble and how the other figurines help. Allow 5 minutes.

Clean-up: Ask the children to clean up the room because it is almost time to go home. The duplos should go back in the bags and the crayons should go back in the box. Allow 3 minutes.

Food: Tell them that they did such a good job that they deserve a snack. Give them three cookies (or alternate snack) on a plate. Allow 3 minutes.

SCRIPT

Begin: Hi, kids! Today you are going to get to play some games together. I'm going to let you start with this train set and later I'll bring you some more games. First, I want to tell you something. Jim and I are going to be very busy so we can't help you with these games. You'll need to pretend we aren't even here. Also, please stay right here in this corner. That will help us a lot to do our work better. Here is the train and I'll be back in a few minutes.

Matching Figures: Nice job, kids! Let me push these Legos aside and you can play with them again later. Right now you are going to get to play a game about same and different. See the bear at the top of this page? Only one other bear down here exactly matches it. Look carefully and see if you can figure out which one it is and mark it with your crayon. It's kind of hard but I think you can do it. When you get through with the bears, there is a tree one just like it on the next page. Here are the crayons and you can start now.

Duplo matching: Good work! I'm going to take these back for now and then later you can have them to take them home. I'm going to give you each a bag of Legos and a picture of some things made with Legos. I want you to make your Legos look like the ones in the picture. When you finish that, I'll bring you another picture. Here is the first picture.

Nice work! Here's your next picture!
(Etc.)

Art Activity: You guys are working so hard! I'm going to move these Legos out of the way now. Do you know what? I really need your help. I started to color this picture but I never got a chance to finish it and I need you to help me finish coloring it. Here are the crayons. I need you to finish coloring each area with the color I started coloring it. Thank you for your help!

Figurines: Boy, I really like what you guys did with this picture! I'm going to take these crayons now and I have another game for you. Guess what? It's story time, and you get to make up the story! Here is a boy and this boy is in trouble. He really needs help. Now, you two make up a story about why the boy is in trouble and how he gets helped.

Clean up: Well, guys, that was a great story! Do you know what? It's almost time to go home now. I need you guys to clean up and then I'll have a treat for you. The duplos need to go back in the boxes and the crayons need to go here. I'll just let you guys finish the clean-up while I fix your treat.

Food: Good job! You guys really deserve a treat. Here you go!

Appendix B

Coding System

DEFINITIONS FOR CODING

General Directions

Use a 30-second interval. Score play behavior and task-centeredness for every interval. Where a behavior must occur for the majority of the interval--usually 20 seconds--in order to score a category, those 20 seconds need not be consecutive. Sibling A is always the younger child!

Play behavior should be scored as either independent or interactive. Independent play is scored when no interaction whatever occurs between the children for the majority (20 or more seconds) of a 30-second interval. If interaction of any kind occurs, then interactive play is scored. Must score for every interval.

Task-centeredness: Each interval should be scored for each child as to whether the child was on-task for the interval. If a child was off-task for the majority (20 seconds) of an interval, the child should be scored as off-task for the entire interval. A child is considered to be off-task if they are trying to do the activity even if they are doing it wrong as long as they are using the materials in an appropriate manner. When the experimenter is present, being on-task includes all of the following: doing the old task, doing the new task, and listening to the experimenter. Examples of off-task behavior: staring off into space, performing an activity other than the one suggested (such as turning the matching figures paper over and drawing a picture), playing when asked to clean up, playing instead of doing the art activity, or wandering away from the task area. This is an affectively neutral category; if the child is, for example, throwing things or having a fit, these behaviors are scored as agonistic. Score this category for every interval.

Imitation is performing the same (or very similar) behavior as the sibling within same or adjacent intervals of the sibling performing that behavior. (Do not score if activity suggested or demanded by other sibling.) There are two kinds of imitation:

1. Verbal imitation is repetition of the same or very similar words used by the sibling within 15 seconds. May include nonsense utterances (for example, "chugga chugga choo choo".)
2. Physical imitation is indicated by one sibling observing the other and then following the behavior of that sibling within the same or adjacent 30-second interval. For example, if the first sibling is scribbling on a piece of paper and the second sibling observes and then finds a piece of paper of her own to begin scribbling on, then physical imitation should be scored. Physical imitation also includes taking over a toy abandoned by the other child if it is apparent that the second child had desired the toy and claimed the toy within 30 seconds of the first child leaving it. Examples of imitation within each activity:

- a. matching figures: child watches the other child and then circles the same figures as that child.
- b. duplos: child watches the other child and then follows what the other child is doing. Also score if the child changes what he is doing based on observation of the other child.
- c. art activity: child watches what the other child does and then begins coloring in the same manner, with the same color, or alters how he/she is coloring in some way after the observation.
- d. figurines: the figurine the first child uses is taken over by the second child when the first child abandons it. Or, the first child has his figurine behave in a given manner and the second child's figurine begins to behave in the same manner shortly thereafter.
- e. clean-up: the child begins to put the toys away after observing the other child putting toys away. Or, the child alters how he is putting the toys away based on the other child's behavior (example: throwing the toys into the bag after watching his sister throwing them in when he had been placing them into the bag nicely before).

Agonism is negative behavior with the apparent aim of causing suffering or unhappiness in the sibling. Four types of agonism are scored:

- 1. Affective--the child shows by his facial expression that he or she is unhappy with the other child. This can be pouting, crying, glaring, sticking the tongue out, etc. Whining is also included in this category. This category differs from verbal agonism in that the unhappiness displayed is not directly used in a verbal attack against the sibling. Score affective agonism only when this behavior is not accompanied by verbal or physical aggression directed at the sibling within a 30 second period. Score the order of the behavior with a 1 or a 2 (e.g., Sibling A sticks out his tongue and Sibling B responds by sticking out her tongue; score 1 for Sibling A and 2 for Sibling B).
- 2. Disrupts--the child's behavior is directed at disrupting the task at hand. The child is not merely off-task; rather, he or she indicates by throwing things off the table, breaking crayons, etc. that he does not wish to be involved with the task. The behavior may also be aimed at disrupting the sibling's completion of the task, although if clear intent to hurt the sibling is indicated, then physical agonism should be scored instead.
- 3. Physical--the child hits, kicks, pushes, scratches, bites, fights with, or throws something at the sibling. Physical

agonism involves actual or attempted physical contact aimed at inflicting pain on his or her sibling.

4. Verbal--the child threatens, humiliates, criticizes, teases, calls names, argues with, yells at, or is sarcastic with his or her sibling.

Prosocial behavior is positive interaction between siblings. Five categories are scored:

1. Affective--smiling at or laughing with the sibling. Indication of generally enjoying the activity is also scored here. If accompanied by physical contact, physical prosocial behavior should be scored as well.
2. Physical--hugging, patting, kissing, caressing, holding on one's lap, tickling, or other positive physical contact which is enjoyed by both siblings.
3. Verbal--the child comforts, reassures, indicates approval, expresses empathy or sympathy, or praises his or her sibling. Examples: "I love you.", "Nice job!", "It's okay.", "Don't worry.", "That was nice of you."
4. Help/teach--the child attempts to assist when the sibling is having difficulty with a task. Examples: helping the sibling get the duplos together, showing the sibling how to do the matching figures test, helping the sibling color within the lines, helping the sibling put the toys away in the right bag, etc. Tone of interaction is of key importance here--the intention should clearly be helping and not dominating. A good example of this is the child using herself as an example, "Watch me, see how I do this." If the helping child is telling the other child what to do rather than assisting, score verbal dominance. Score as nonverbal dominance if the child completely takes over the task and does it for the sibling.
5. Give--the child gives a toy, crayon, paper, etc. to the sibling.

Dominance is a display of power by one sibling over another. Three specific types of dominance might be scored:

1. Verbal dominance is scored when a sibling verbally attempts to direct the nature of ongoing interaction or play. "You be the baby and I'll be the mommy" is verbal dominance. Verbal dominance is scored for both tone and mutuality. It is also scored for sibling response.

*** Tone of verbal dominance refers to the amount of coerciveness implied in the directive. Score tone in the following manner: 0=no coerciveness ("Let's play house."); 1=low to moderate coerciveness ("No, you color that

blue!"); 2=high coerciveness ("I'm telling you to do it this way or else!").

*** Mutuality of verbal dominance refers to whether the child is encouraging an activity that involves both siblings or is simply telling the other sibling what to do. Score 0 (not mutual) if the child is telling the other child what to do ("You color that part blue."); score 1 (mutual) if the suggested activity includes both siblings, usually using words such as "we" or "let's" ("Let's color this part blue.").

*** Sibling response refers to the sibling's reaction to the other sibling's directiveness. Check either comply (obeys or gives in), noncomply (does not obey; actively indicates disobedience) or neutral (does not or pretends not to notice). Neutral is a seldom-used category; if a child chooses not to protest but notices the dominance, score comply.

Other ways in which non-verbal dominance may be exhibited in the following settings include:

- a. Duplos task: one child telling the other that he will complete the task since there aren't enough duplos for them both to make the figures.
 - b. Art activity: telling the other child which areas he is to color or otherwise verbally specifying how the activity is to be completed.
 - c. Figurines: the dominant child is the one who is verbally determining the direction of the storyline or play.
 - d. Clean-up: the dominant child is the one who decides or restates when or how the task is to be accomplished and verbalizes this.
2. Nonverbal--neither child verbally directs the interaction, but it is apparent that one child is clearly in control. An example of this is during the warm-up, when one sibling dominates control of the train set while the other child sits and watches. The first child may even indicate that the other sibling is not welcome to touch the train. (Arguments are scored as verbal agonism). Score for the other child's response: comply, noncomply, or neutral.
 3. Help seeking--the child verbally or nonverbally asks the sibling for help. May include indirect requests such as "I'm having trouble with this." or "I can't do this by myself." when they appear to be an attempt to ask for help. This category also includes asking the adult experimenters for help. If this occurs, mark the blank "A" for adult.

The food sharing task should be scored separately, using a running description of the activity. Example: "Sibling A takes a cookie and begins to eat. Sibling B also takes a cookie and begins to

at. Sibling A finishes the first cookie and takes the last cookie on the plate. Sibling B says, "I wanted that cookie." Sibling A does not respond. Sibling B finishes the cookie and begins playing with a string on the carpet."

Additional Rules

1. Write an "E" in the corner whenever the experimenter is present and can be seen. Place the "E" in the center between the words "Sib A" and "Sib B". Continue to score sibling behavior during this interval.
2. Whenever dominance occurs, compliance, tone, and mutuality must be scored. No other category (such as give, help/teach, or helpseeking) are scored for compliance, tone, or mutuality.
3. A request, such as "Can I have the red crayon?" is scored as a question mark in the helpseeking category.
4. Begin when the timer appears in the corner. Watch the entire 30-second segment before scoring; do not score during the segment.
5. Rewind as necessary for accuracy.
6. The intent of disruption is to stop the sibling's activity, not to control it. For disruption to occur, one sibling must be off-task while the other is on task. For example, if one child grabs all the duplos and won't let the other have any, that is nonverbal dominance. If one child is playing with the duplos and the other is not, and then the second child takes away a duplo that prevents the first child from completing the project, that is disruption.

Appendix C

SBRS

SIBLING BEHAVIOR RATING SCALE-MH

Instructions: Please circle the answer you feel most accurately describes how your child treats his or her preschool-aged sibling.

1. Does things to please him.
Never Almost never Sometimes Almost always Always
2. Gets angry with him.
Never Almost never Sometimes Almost always Always
3. Helps him in any way possible.
Never Almost never Sometimes Almost always Always
4. Is embarrassed to be with him in public.
Never Almost never Sometimes Almost always Always
5. Teases or annoys him.
Never Almost never Sometimes Almost always Always
6. Acts jealous of the special attention he gets.
Never Almost never Sometimes Almost always Always
7. Shows or tells him interesting things.
Never Almost never Sometimes Almost always Always
8. Acts ashamed of him.
Never Almost never Sometimes Almost always Always
9. Is willing to run errands and do favors for him.
Never Almost never Sometimes Almost always Always
10. Seems to forget the handicap when they are playing or joking together.
Never Almost never Sometimes Almost always Always
11. Helps him adjust to new situations.
Never Almost never Sometimes Almost always Always
12. Tries to comfort him when he is unhappy or upset.
Never Almost never Sometimes Almost always Always
13. Stays away from him if possible.
Never Almost never Sometimes Almost always Always
14. Says nice things about him.
Never Almost never Sometimes Almost always Always
15. Sees his good points more than his problems.
Never Almost never Sometimes Almost always Always
16. Fusses and argues with him.
Never Almost never Sometimes Almost always Always
17. Gets ideas for things they can do together.
Never Almost never Sometimes Almost always Always
18. Protects him from harm or teasing.
Never Almost never Sometimes Almost always Always
19. Complains about the trouble he makes.
Never Almost never Sometimes Almost always Always
20. Teaches him new skills.
Never Almost never Sometimes Almost always Always
21. Is pleased by progress he makes.
Never Almost never Sometimes Almost always Always
22. Frowns or pouts when he/she has to be with him.
Never Almost never Sometimes Almost always Always
23. Makes plans that includes him.
Never Almost never Sometimes Almost always Always
24. Points out his handicap more than his strengths.
Never Almost never Sometimes Almost always Always

SIBLING BEHAVIOR RATING SCALE-MN

Instructions: Please circle the answer you feel most accurately describes how your child treats his or her preschool-aged sibling.

- | | | | | | |
|--|-------|--------------|-----------|---------------|--------|
| 1. Does things to please him. | Never | Almost never | Sometimes | Almost always | Always |
| 2. Gets angry with him. | Never | Almost never | Sometimes | Almost always | Always |
| 3. Helps him in any way possible. | Never | Almost never | Sometimes | Almost always | Always |
| 4. Is embarrassed to be with him in public. | Never | Almost never | Sometimes | Almost always | Always |
| 5. Teases or annoys him. | Never | Almost never | Sometimes | Almost always | Always |
| 6. Acts jealous of the special attention he gets. | Never | Almost never | Sometimes | Almost always | Always |
| 7. Shows or tells him interesting things. | Never | Almost never | Sometimes | Almost always | Always |
| 8. Acts ashamed of him. | Never | Almost never | Sometimes | Almost always | Always |
| 9. Is willing to run errands and do favors for him. | Never | Almost never | Sometimes | Almost always | Always |
| 10. Seems to forget the age difference when they are playing or joking together. | Never | Almost never | Sometimes | Almost always | Always |
| 11. Helps him adjust to new situations. | Never | Almost never | Sometimes | Almost always | Always |
| 12. Tries to comfort him when he is unhappy or upset. | Never | Almost never | Sometimes | Almost always | Always |
| 13. Stays away from him if possible. | Never | Almost never | Sometimes | Almost always | Always |
| 14. Says nice things about him. | Never | Almost never | Sometimes | Almost always | Always |
| 15. Sees his good points more than his problems. | Never | Almost never | Sometimes | Almost always | Always |
| 16. Fusses and argues with him. | Never | Almost never | Sometimes | Almost always | Always |
| 17. Gets ideas for things they can do together. | Never | Almost never | Sometimes | Almost always | Always |
| 18. Protects him from harm or teasing. | Never | Almost never | Sometimes | Almost always | Always |
| 19. Complains about the trouble he makes. | Never | Almost never | Sometimes | Almost always | Always |
| 20. Teaches him new skills. | Never | Almost never | Sometimes | Almost always | Always |
| 21. Is pleased by progress he makes. | Never | Almost never | Sometimes | Almost always | Always |
| 22. Frowns or pouts when he/she has to be with him. | Never | Almost never | Sometimes | Almost always | Always |
| 23. Makes plans that includes him. | Never | Almost never | Sometimes | Almost always | Always |
| 24. Points out his problems more than his strengths. | Never | Almost never | Sometimes | Almost always | Always |

SIBLING BEHAVIOR RATING SCALE-FH

Instructions: Please circle the answer you feel most accurately describes how your child treats his or her preschool-aged sibling.

1. Does things to please her.
Never Almost never Sometimes Almost always Always
2. Gets angry with her.
Never Almost never Sometimes Almost always Always
3. Helps her in any way possible.
Never Almost never Sometimes Almost always Always
4. Is embarrassed to be with her in public.
Never Almost never Sometimes Almost always Always
5. Teases or annoys her.
Never Almost never Sometimes Almost always Always
6. Acts jealous of the special attention she gets.
Never Almost never Sometimes Almost always Always
7. Shows or tells her interesting things.
Never Almost never Sometimes Almost always Always
8. Acts ashamed of her.
Never Almost never Sometimes Almost always Always
9. Is willing to run errands and do favors for her.
Never Almost never Sometimes Almost always Always
10. Seems to forget the handicap when they are playing or joking together.
Never Almost never Sometimes Almost always Always
11. Helps her adjust to new situations.
Never Almost never Sometimes Almost always Always
12. Tries to comfort her when she is unhappy or upset.
Never Almost never Sometimes Almost always Always
13. Stays away from her if possible.
Never Almost never Sometimes Almost always Always
14. Says nice things about her.
Never Almost never Sometimes Almost always Always
15. Sees her good points more than her problems.
Never Almost never Sometimes Almost always Always
16. Fusses and argues with her.
Never Almost never Sometimes Almost always Always
17. Gets ideas for things they can do together.
Never Almost never Sometimes Almost always Always
18. Protects her from harm or teasing.
Never Almost never Sometimes Almost always Always
19. Complains about the trouble she makes.
Never Almost never Sometimes Almost always Always
20. Teaches her new skills.
Never Almost never Sometimes Almost always Always
21. Is pleased by progress she makes.
Never Almost never Sometimes Almost always Always
22. Frowns or pouts when he/she has to be with her.
Never Almost never Sometimes Almost always Always
23. Makes plans that includes her.
Never Almost never Sometimes Almost always Always
24. Points out her handicap more than her strengths.
Never Almost never Sometimes Almost always Always

SIBLING BEHAVIOR RATING SCALE-FN

Instructions: Please circle the answer you feel most accurately describes how your child treats his or her preschool-aged sibling.

1. Does things to please her.
Never Almost never Sometimes Almost always Always
2. Gets angry with her.
Never Almost never Sometimes Almost always Always
3. Helps her in any way possible.
Never Almost never Sometimes Almost always Always
4. Is embarrassed to be with her in public.
Never Almost never Sometimes Almost always Always
5. Teases or annoys her.
Never Almost never Sometimes Almost always Always
6. Acts jealous of the special attention she gets.
Never Almost never Sometimes Almost always Always
7. Shows or tells her interesting things.
Never Almost never Sometimes Almost always Always
8. Acts ashamed of her.
Never Almost never Sometimes Almost always Always
9. Is willing to run errands and do favors for her.
Never Almost never Sometimes Almost always Always
10. Seems to forget the age difference when they are playing or joking together.
Never Almost never Sometimes Almost always Always
11. Helps her adjust to new situations.
Never Almost never Sometimes Almost always Always
12. Tries to comfort her when she is unhappy or upset.
Never Almost never Sometimes Almost always Always
13. Stays away from her if possible.
Never Almost never Sometimes Almost always Always
14. Says nice things about her.
Never Almost never Sometimes Almost always Always
15. Sees her good points more than her problems.
Never Almost never Sometimes Almost always Always
16. Fusses and argues with her.
Never Almost never Sometimes Almost always Always
17. Gets ideas for things they can do together.
Never Almost never Sometimes Almost always Always
18. Protects her from harm or teasing.
Never Almost never Sometimes Almost always Always
19. Complains about the trouble she makes.
Never Almost never Sometimes Almost always Always
20. Teaches her new skills.
Never Almost never Sometimes Almost always Always
21. Is pleased by progress she makes.
Never Almost never Sometimes Almost always Always
22. Frowns or pouts when he/she has to be with her.
Never Almost never Sometimes Almost always Always
23. Makes plans that includes her.
Never Almost never Sometimes Almost always Always
24. Points out her problems more than her strengths.
Never Almost never Sometimes Almost always Always